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ELASTIC SCATTERING OF ELECTRONS BY HELIUM ATOM IN OCHKUR APPROXIMATION

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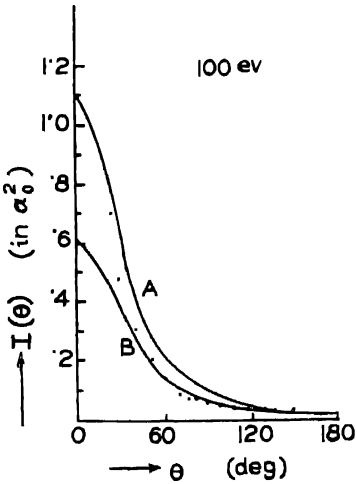
We have applied Ochkur (1964, 1965) approximation to the elastic scattering of electrons by helium atom at the energy 100 ev where Born's approximation is expected not to be valid particularly for differential cross-sections $I(\theta)$ at very small angles of scattering. We have computed $I(\theta)$ at 100 ev for angles ranging from 0° to 180°. Here we find that the marked disagreement between the experimental findings of Hughes *et al*, (1932) and the results of theoretical calculation of Khare and Moiseiwitsch (1965) using static field approximation is removed considerably particularly at forward scattering angles Moreover, an overall



„Differential cross section $I(\theta)$ for the elastic scattering of electrons by helium atoms; curve A—present calculation; curve B—calculation of Khare and Moiseiwitsch (1965); 0, experimental points of Hughes et al. (1932) normalised to the theoretical curve for 700 ev obtained by employing the Born approximation.

agreement throughout the angular range is obtained, as can be seen from the adjoining figure.

It may be mentioned here that the ground state wavefunction of helium atom we have used is that of Green *et al*, (1954), i.e.

$$\psi_0(r_1, r_2) = \phi(r_1)\phi(r_2)$$

where $$\phi(r) = N(e^{-zr} + ce^{-2zr})$$

with $$N = 1.48423$$

$$C = .60$$

$$Z = 1.4558$$

Further calculations are in progress and will be published soon.

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